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## Cancer Research

March 15, 2013 • Volume 73 • Number 6

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- Juanqi Yang, Biswanath Maity, Jie Huang, Zhan Gao, Adele Stewart, Robert M. Weiss, Mark E. Anderson, and Rory A. Fisher

- ** précis:** This important study suggests a rational approach to limiting the well-known cardiotoxic effects of doxorubicin (adriamycin), one of the most effective and widely used cytotoxic chemotherapy drugs for cancer treatment.

1668 | Trp53 Inactivation in the Tumor Microenvironment Promotes Tumor Progression by Expanding the Immunosuppressive Lymphoid-like Stromal Network

- Gang Guo, Luis Marrero, Paulo Rodriguez, Luis Del Valle, Augusto Ochoa, and Yan Cui

- ** précis:** Findings reveal a previously unappreciated function for p53 in maintaining an immunological microenvironment that can suppress tumorigenesis and progression.

### CLINICAL STUDIES

1676 | Phase I Trial of Recombinant Modified Vaccinia Ankara Encoding Epstein–Barr Viral Tumor Antigens in Nasopharyngeal Carcinoma Patients


- ** précis:** Vaccination of nasopharyngeal carcinoma patients targeting two pathogenic viral antigens produces potent immune responses after they have completed chemo/radiotherapy.

### INTEGRATED SYSTEMS AND TECHNOLOGIES

1689 | Earlier Detection of Breast Cancer with Ultrasound Molecular Imaging in a Transgenic Mouse Model

- Sanitha V. Bachwal, Kristin C. Jensen, Amelie M. Lutz, Sanjiv S. Gambhir, Francois Tranquart, Lu Tian, and Jurgen K. Willmann

- ** précis:** This study lays the foundation for the development of a novel ultrasound-based imaging approach for earlier detection of breast cancer and paves the way for translational clinical trials in the future.

1699 | Collections of Simultaneously Altered Genes as Biomarkers of Cancer Cell Drug Response

- David L. Masica and Rachel Karchin

- ** précis:** New methods are offered to improve the identification of drug response biomarkers in cancer cells.

### MICROENVIRONMENT AND IMMUNOLOGY

1709 | Therapeutic Efficacy of Bifunctional siRNA Combining TGF-β1 Silencing with RIG-I Activation in Pancreatic Cancer

- Jonathan Ellermeier, Jiwu Wei, Peter Duewell, Sabine Hoves, Mareike R. Stieg, Tina Adunka, Daniel Noerenberg, Hans-Joachim Anders, Doris Mayr, Hendrik Poeck, Gunther Hartmann, Stefan Endres, and Max Schnurr

- ** précis:** The potency of a therapeutic siRNA can be increased by a parallel strategy to combinatorially activate an RNA helicase that triggers inflammatory responses to double-stranded viral RNA, with implications for understanding how to reprogram the tumor microenvironment to destroy tumor cells.
1721 LOX-Mediated Collagen Crosslinking Is Responsible for Fibrosis-Enhanced Metastasis
Thomas R. Cox, Demelza Bird, Ann-Marie Baker, Holly E. Barker, Melissa W-Y. Ho, Georgina Lang, and Janine T. Erler

Précis: The fibrotic status of a metastatic niche that is determined by the extracellular matrix plays a pivotal role in determining colonization of new sites by circulating tumor cells.

1733 Evidence for a Role of the PD-1:PD-L1 Pathway in Immune Resistance of HPV-Associated Head and Neck Squamous Cell Carcinoma

Précis: HPV-associated oropharyngeal cancers, which are increasing in incidence in the developed world, evade immune surveillance through an escape pathway that is actively being targeted in clinical trials.

1742 IFN-γ-Mediated Downregulation of LXA4 Is Necessary for the Maintenance of Nonresolving Inflammation and Papilloma Persistence
Chunhui Wang, Mingjie Xiao, Xiaoman Liu, Chen Ni, Jianhong Liu, Ulrike Erben, and Zhihai Qin

Précis: By helping resolve an inflammatory response, IFNγ blockade can promote tumor regression by reprogramming the inflammatory microenvironment.

1752 Myeloid-Specific Expression of Ron Receptor Kinase Promotes Prostate Tumor Growth
Devikala Gurusamy, Jerilyn K. Gray, Peterson Pathrose, Rishikesh M. Kulkarni, Fred D. Finkleman, and Susan E. Waltz

Précis: This study suggests a new strategy to treat prostate tumors, by blocking a tyrosine kinase that supports tumor-associated macrophages that drive immune escape.

1764 HLA-Restricted CTL That Are Specific for the Immune Checkpoint Ligand PD-L1 Occur with High Frequency in Cancer Patients
Shamaila Munir, Gitte Holmen Andersen, Özcan Met, Marco Donia, Thomas Mørch Frøsig, Stine Kiaer Larsen, Tobias Wiernfeldt Klausen, Inge Marie Svane, and Mads Hald Andersen

Précis: PD-L1-specific cytotoxic T cells described for the first time in this study may be useful to harness for cancer immunotherapy to defeat mechanisms of immune escape used in various cancers mediated by the PD1 pathway.

1777 A Chimeric Receptor with NKG2D Specificity Enhances Natural Killer Cell Activation and Killing of Tumor Cells
Yu-Hsiang Chang, John Connolly, Noriko Shimasaki, Kousaku Mimura, Koji Kono, and Dario Campana

Précis: Findings illustrate how to increase the antitumor efficacy of NK cell therapy, a strategy that may be used to fight nearly any kind of human cancer.

1787 Transcription Factor YY1 Contributes to Tumor Growth by Stabilizing Hypoxia Factor HIF-1α in a p53-Independent Manner
Shourong Wu, Vivi Kasim, Mitsunobu R. Kano, Sayaka Tanaka, Shinuke Ohta, Yutaka Miura, Kanjiro Miyata, Xueying Liu, Ako Matsushashi, Ung-il Chung, Li Yang, Kazunori Kataoka, Nobuhiko Nishiyama, and Makoto Miyagishi

Précis: Findings suggest a mechanistic strategy to block a core hypoxia-driven progression pathway regardless of p53 status.

1800 Arkadia Regulates Tumor Metastasis by Modulation of the TGF-β Pathway
Marco A. Briones-Orta, Laurence Levy, Chris D. Madsen, Debi Priya Das, Yigit Erker, Erik Sahai, and Caroline S. Hill

Précis: An E3 ubiquitin ligase in the TGF-β signaling pathway is not required to regulate tumor growth but to colonize metastasis sites, suggesting novel antimetastatic strategies.

1811 Phosphorylation of Ribosomal Protein S6 Attenuates DNA Damage and Tumor Suppression during Development of Pancreatic Cancer
Abed Khalaileh, Avigail Dreazen, Areej Khatib, Roy Apel, Avital Swisa, Norma Kidess-Bassir, Anirban Maitra, Oded Meyuhas, Yuval Dor, and Gideon Zamir

Précis: Findings reveal that a key mTOR effector molecule is crucial for initiation of K-Ras-induced pancreatic cancers, illuminating the centrality of this mTOR pathway to evade p53-mediated tumor suppression in this setting.
Dormant Cancer Cells Contribute to Residual Disease in a Model of Reversible Pancreatic Cancer


Proliferation-Independent Control of Tumor Glycolysis by PDGFR-Mediated AKT Activation

Cong Ran, Huan Liu, Yasuyuki Hitoshi, and Mark A. Israel

Precise: Findings argue that tyrosine kinase growth factor signaling directly affects glucose metabolism in glioma and is not a secondary response to enhanced proliferation, as suggested in other cancer models.

Telomere Length and Telomerase Activity Impact the UV Sensitivity Syndrome Xeroderma Pigmentosum C

Gerdine J. Stout and Maria A. Blasco

Precise: Findings reveal a role for the DNA repair protein XPC in telomere stability and how activation occurs for the ALT pathway of telomere maintenance, a broadly important aspect of tumor formation.

xCT Inhibition Depletes CD44v-Expressing Tumor Cells That Are Resistant to EGFR-Targeted Therapy in Head and Neck Squamous Cell Carcinoma

Momoko Yoshikawa, Kenji Tsuchihashi, Takatsugu Ishimoto, Toshifumi Yae, Takeshi Motohara, Eiji Suqihara, Nobuyuki Onishi, Takashi Masuko, Kunio Yoshizawa, Shuichi Kawashiri, Makio Mukai, Seiji Asoda, Hiromasa Kawana, Taneaki Nakagawa, Hideyuki Saya, and Osamu Nagano

Precise: Cells that express variant isoforms of the stem cell-determining factor CD44 rely on the activity of a cystine transporter subunit that affects redox status and EGFR function.

MicroRNA-Related Genetic Variants Associated with Clinical Outcomes in Early-Stage Non–Small Cell Lung Cancer Patients

Xia Pu, Jack A. Roth, Michelle A.T. Hildebrandt, Yuanqing Ye, Hua Wei, John D. Minna, Scott M. Lippman, and Xifeng Wu

Precise: This large study of non-small cell lung cancer suggests that miRNA-related polymorphisms can predict clinical outcomes at a level that may be superior to other markers developed previously.

Genetic Variation in Transforming Growth Factor Beta 1 and Mammographic Density in Singapore Chinese Women

Eunijung Lee, David Van den Berg, Chris Hsu, Giske Ursin, Woon-Puay Koh, Jian-Min Yuan, Daniel O. Stram, Mimi C. Yu, and Anna H. Wu

Precise: Host genetic polymorphisms in a key growth factor in breast cancer may help identify women at an increased risk of breast cancer.

Identification of Inherited Genetic Variations Influencing Prognosis in Early-Onset Breast Cancer

Sajjad Rafiq, William Tapper, Andrew Collins, Solla Khan, Ioannis Politopoulos, Sue Gerty, Carl Blomsqvist, Fergus J. Couch, Heli Nevanlinna, Jianjun Liu, and Diana Eccles

Precise: This study maps host genetic variations that affect risks of poor prognosis in early onset breast cancer patients, with implications for how aggressive treatments should be used to improve survival outcomes.

Focused Ultrasound Delivers Targeted Immune Cells to Metastatic Brain Tumors

Ryan Alkins, Alison Burgess, Milan Ganguly, Giulio Francia, Robert Kerbel, Winfried S. Wels, and Kullervo Hynynen

Precise: Noninvasive MR-guided focused ultrasound allows targeted natural killer cells to circumvent the blood-brain barrier and treat HER2-amplified breast metastasis in the brain.

Caveolin-1–LRP6 Signaling Module Stimulates Aerobic Glycolysis in Prostate Cancer

Salahaldin A. Tahir, Guang Yang, Alexei Goltsiov, Ki-Duk Song, Chengzhen Ren, Jianxiang Wang, Wenjun Chang, and Timothy C. Thompson

Precise: This study offers mechanistic insights into how aerobic glycolysis is increased in prostate cancer, possibly revealing critical targets for effective antimitabolytic therapy in this setting.
1958

**Phenotypic Profiling of DPDY Variations Relevant to 5-Fluorouracil Sensitivity Using Real-time Cellular Analysis and In Vitro Measurement of Enzyme Activity**

Steven M. Offer, Natalie J. Wegner, Croix Fossum, Kangsheng Wang, and Robert B. Diasio

**Precis:** An understanding of the contribution of DPDY alleles to 5-FU toxicity will facilitate the generation of clinically relevant predictive tests and promote the individualization of treatment based on genotype.

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1993

**mTOR Complex 2 Is Involved in Regulation of Chl-Dependent c-FLIP Degradation and Sensitivity of TRAIL-Induced Apoptosis**

Liqun Zhao, Ping Yue, Fadlo R. Khuri, and Shi-Yong Sun

**Precis:** Findings show how mTORC2 stabilizes the FLIP apoptotic regulators, thereby connecting mTORC2 signaling to death receptor-mediated apoptosis.

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1999

**Involvement of Lyn and the Atypical Kinase SgK269/PEAK1 in a Basal Breast Cancer Signaling Pathway**


**Precis:** This study addresses a rationale to target basal breast cancers, also known as triple negative breast cancers, which present a major clinical challenge due to their aggressive nature and lack of targeted treatments.

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2003

**Genetic Amplification of the NOTCH Modulator LNX2 Upregulates the WNT/β-Catenin Pathway in Colorectal Cancer**

Jordi Camps, Jason J. Pitt, Georg Emons, Amanda B. Hummon, Chanelle M. Case, Marian Grade, Tamara L. Jones, Quang T. Nguyen, B. Michael Ghadimi, Tim Beisibarth, Michael J. Difilippantonio, Natasha J. Caplen, and Thomas Ried

**Precis:** Note that Wnt signaling pathways are upregulated by overexpression of a ligand for the endocytic adaptor protein Numb, a Notch inhibitory protein, coordinately stimulating both of these critical oncogenic pathways in colorectal cancer.
ABOUT THE COVER

Inactivation of the tumor suppressor p53 frequently occurs in tumors and tumor-associated stromal cells. This study shows that p53 dysfunction in tumor-associated stroma of B16F1 melanoma favors tumor establishment and progression by promoting an inflammatory microenvironment. Using immunofluorescence, it was found that lymphoid-like fibroblastic reticular cells, which express ER-TR7 (green), GP38 (red), and α-SMA (blue), were markedly expanded in the tumor microenvironment lacking functional p53. The expansion of this specialized stromal network was associated with augmented myeloid derived suppressor cells and angiogenesis. For details, see the article by Guo and colleagues on page 1668.